

厦门欧睿拓科技有限公司
Xiamen Ollital Technology Co., Ltd



PQ-P8S 干冰清洗机
PQ-P8S dry ice cleaning machine
使用说明书 User Manual

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前言

Preface

欢迎您使用干冰清洗机,在此感谢您对厦门欧睿拓科技有限公司产品的支持!使用前请务必认真阅读此说明书。

本手册包含了操作和维护人员进行日常工作和日常维护所需的信息。如有任何疑问,请联系我们。

干冰清洗机保留在没有事先通知的情况下修改和改进产品的权利,没有义务对以前销售的机器进行同样的修改和改进。

用户应了解当地有关干冰清洗机的安装和使用的法律、法规,并予以遵守。操作人员有责任确保机器在安全的条件下运行。如果认为机器存在安全隐患,应及时检修。

干冰清洗机无法预见每一种可能的用途和工作条件。对用户使用的劣质部件和附件造成的干冰清洗机无法控制的危险情况不承担任何责任。

Welcome to use the dry ice cleaner, and thank you for your support of the products of Xiamen Ollital Technology Co., Ltd! Please be sure to read this manual carefully before use.

This manual contains the information required by the operating and maintenance personnel for daily work and routine maintenance. If you have any questions, please contact us.

Dry Ice Cleaner reserves the right to modify and improve its products without prior notice and is under no obligation to make the same modifications and improvements to previously sold machines.

Users should be aware of local laws and regulations regarding the installation and use of dry ice cleaners and comply with them. It is the operator's responsibility to ensure that the machine is operated in safe conditions. If the machine is deemed to be a safety hazard, it should be serviced promptly.

Dry ice cleaners cannot anticipate every possible use and operating condition. No responsibility can be accepted for dangerous situations beyond the control of the dry ice cleaner caused by the use of inferior parts and accessories by the user.

1、安全注意事项 Safety Precautions

使用前，请熟读此使用说明书，以便安全、正确地使用本产品。本注意事项的目的是为防止因错误使用而引起伤害事故，请在正确理解所有内容后使用。

Before use, please read this instruction manual thoroughly so that you can use this product safely and correctly. The purpose of this caution is to prevent injury accidents caused by incorrect use, so please use it after understanding all the contents correctly.

1.1 一般安全要求 General safety requirements

- 操作人员必须佩戴防护用品进行操作（包括安全眼镜，手套，耳塞等）。
Operators must wear protective equipment for operation (including safety glasses, gloves, ear plugs, etc.).
- 喷射过程中有一定的冲击力，请勿将喷枪对准自己或他人，防止受伤。
There is a certain impact during the spraying process, please do not point the gun at yourself or others to prevent injury.
- 请勿在无人看管设备的情况下运行。
Do not run the unit unattended.
- 请将设备置于通风环境中使用。
Please use the equipment in a ventilated environment.
- 勿于易燃易爆气体环境、腐蚀性环境、易沾水环境及易燃物附近使用。否则有火灾、触电、受伤的可能。
Do not use in flammable and explosive gas environment, corrosive environment, water-prone environment and near flammable materials. Otherwise, there is a possibility of fire, electric shock and injury.
- 安装、接线、运转、操作、检点、故障分析等作业须由专业技术人员实行，否则有火灾、触电、受伤的可能。
Installation, wiring, operation, operation, checkpoint, fault analysis and other operations must be carried out by professional and technical personnel, otherwise there is the possibility of fire, electric shock and injury.
- 勿在通电状态下进行移动、安装、接线、检点等作业（务必在切断电源后方可实施），否则有触电的可能。
Do not move, install, wire, check points and other operations in the energized state (be sure to implement only after the power is cut off), otherwise there is a possibility of electric shock.
- 请连接带有接地标志的 220V 电压供电，务请遵守电源输入电压的额定范围，否则有触电、受伤的可能。
Please connect the 220V power supply with grounding mark, please observe the rated range of power input voltage, otherwise there is the possibility of electric shock and injury.
- 由于二氧化碳会带来窒息的危险，请将设备置于通风环境中使用。
Since carbon dioxide poses a risk of asphyxiation, please use the equipment in a ventilated environment.
- 由于飞溅的干冰会带来受伤的危险，切勿直接用喷枪直接喷人。

Because splashing dry ice poses a risk of injury, do not spray people directly with the gun.

- 当操作区域内有人员时，要特别小心地进行操作。

When there are people in the operating area, proceed with special care.

- 在拆卸爆破软管之前，请务必关闭主电源并拔下电缆接头。

Be sure to turn off the main power and unplug the cable connector before removing the burst hose.

1.2 加入干冰要求 Add dry ice requirements

- 干冰温度是零下 78.5℃，易低温冻伤，在没有适当保护的情况下，切勿用手接触干冰。

Dry ice temperature is $-78.5\text{ }^{\circ}\text{C}$, easy to low-temperature frostbite, without proper protection, do not touch the dry ice with your hands.

- 打开干冰仓盖板检查干冰仓内是否有异物，若有，请将其清除后加入干冰，并盖上干冰仓盖。

Open the dry ice bin cover to check if there are any foreign objects in the dry ice bin, if so, remove them and add dry ice and cover the dry ice bin cover.

- 加入干冰后请尽快使用，避免残留干冰颗粒长时间搁置结块。

Please use it as soon as possible after adding dry ice to avoid caking of residual dry ice pellets for a long time.

- 不要使用粉状或凝聚的干冰。

Do not use powdered or coagulated dry ice.

- 不要允许干冰包装上的碎片进入料斗。

Do not allow debris from the dry ice package to enter the hopper.

- 拆箱后，请尽快用完干冰。

After unpacking, please use up the dry ice as soon as possible.

1.3 通道 Thoroughfare

在系统周围应有足够的通道、照明和通风顺畅，以便安全的操作设备。

There should be adequate access, lighting and smooth ventilation around the system for safe operation of the equipment.

2、设备简介及原理

Equipment Introduction and Principle

2.1 设备简介 Equipment Introduction

产品适用场景：汽车后市场、EVA 模具、石化工业、铸造业、硫化模具、电机电力、印刷业、航空航天业、热力业、金属表面除锈除漆、风机叶轮件表面涂覆层、电子行业、模塑产品去毛刺、二手设备翻新、工业清洗服务、食品业、火损消防、船舶业、环保清洗工艺、注塑模具、涂覆机保养、焊锡机及治具保养等其它工业产品的除油除垢除尘工艺。

环境要求：温度：-10~40℃ 湿度：<75%

Product application scenario: automotive aftermarket, EVA mold, petrochemical industry, foundry industry, vulcanization mold, motor power, printing industry, aerospace industry, thermal industry, metal surface rust and paint removal, fan impeller surface coating layer, electronics industry, molded products deburring, used equipment refurbishment, industrial cleaning services, food industry, fire damage fire, marine industry, environmental protection cleaning process, injection mold, coating machine maintenance The process of degreasing and dust removal for other industrial products, such as soldering machines and jig maintenance.

Environmental requirements: Temperature: -10~40℃ Humidity: <75%

2.2 工作原理 Working Principle

设备工作时干冰在漏斗下料口调入混冰腔内部，混冰腔内部切冰轮周圈带有凹槽，凹槽可容下干冰颗粒，混冰棍被电机带动旋转，通过旋转运动干冰被带入到相对密闭的空间与高压气流混合后被气流推动经过输冰管经手柄喷枪被约束至特定气流束喷射而出撞击至污垢表面并瞬间膨胀约 800 倍自身体积将污垢剥离物体表面后被气流带走的一种物理清洗原理，达到清洗目的。根据污垢附着力度强度调节合适的出冰量。

Equipment work dry ice in the funnel under the mouth of the transfer into the ice mixing cavity inside, ice mixing cavity inside the ice wheel circumference with grooves, grooves can accommodate dry ice particles, ice mixing stick is driven by the motor rotation, through the rotating movement of dry ice is brought into a relatively confined space and high pressure airflow mixing after being pushed by airflow through the ice tube by the handle gun is bound to a specific airflow beam jet out to hit the surface of the dirt and instantly expand about 800 times Self-volume will be stripped of the surface of the object dirt after the airflow away from a physical cleaning principle, to achieve the purpose of cleaning. According to the strength of dirt adhesion to adjust the appropriate amount of ice.

3、设备结构以及控制系统

Equipment structure and control system

3.1 设备组成及配套 Equipment composition and supporting

此设备由电气系统、送冰系统、储冰室、喷射系统组成。

This equipment consists of an electrical system, an ice delivery system, an ice storage chamber, and a blasting system.

3.2 控制系统 Control System

需要 22KW 或者 30KW 以上的空压机支持，空压机应距离清洗现场少于 50 米，距离越长所需空压机功率越大。

22KW or above 30KW air compressor is needed to support, the air compressor should be less than 50 meters away from the cleaning site, the longer the distance the greater the power of the air compressor required.

设备规格

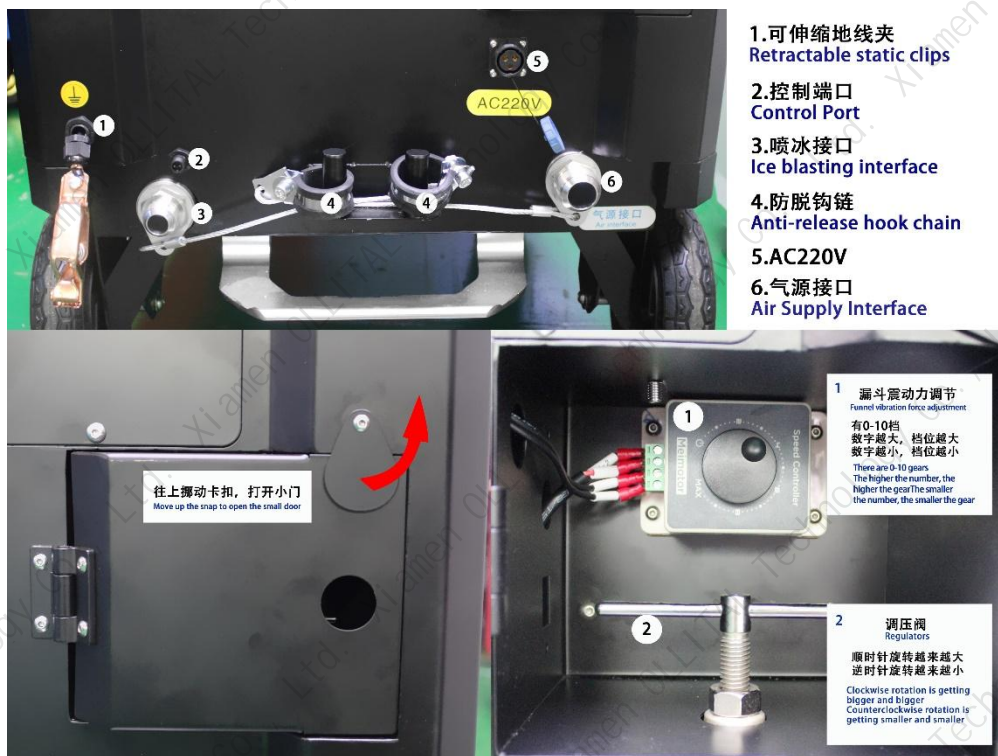
Equipment specifications

功率 power	1.1KW
电压 Voltage	AC220V/50-60HZ
耗气量 Air consumption	0.8m ³ -12 ³ /min
供气压力 Air supply pressure	0.2-1.6Mpa (可调) 0.2-1.6Mpa (adjustable)
送冰速度 Ice delivery speed	0-3.6KG/min (adjustable)/微粒 particulate: 0-0.6KG/min
料斗容量 Hopper capacity	77 lbs(35Kg)
净重 weight	118KG (裸机重量) 118KG (bare weight)
干冰状态 dry ice state	加入干冰状态: 1.5-3MM 颗粒 射出干冰状态: 0.2-3MM Add dry ice state: 1.5-3MM pellets Injection dry ice state : 0.2-3MM

驱动方式 drive mode	直联 Direct link
外形尺寸 Dimensions	95*72*116 (CM)
物联网 Internet of Things	选配功能 (使用网络端口对设备执行远程控制或匹配自动化流水线联机运行) Optional function (use the network port to perform remote control of the device or match the online operation of the automated assembly line)

4、操作说明 Operating Instructions

4.1 操作指示 Operating Instructions



4.2 操作步骤 Operation steps

4.2.1 设备启动准备 Equipment start-up preparation

- 连接进气管;
Connection to the air intake pipe.
- 连接出冰管;
Connect the ice outlet pipe
- 将控制电缆连接到设备上;
Connecting the control cable to the equipment.

- 连接喷枪，确保喷嘴牢固地安装在喷枪上；
Connect the gun, ensuring that the nozzle is securely mounted to the gun.
- 打开料斗盖，确认料斗是否干燥、干净、无残留物，关闭料斗盖；
Open the hopper cover, confirm that the hopper is dry, clean and free of residues, and close the hopper cover.
- 将地线连接到要清洁的物体或其导电支架上；
Connecting the ground wire to the object to be cleaned or to its conductive support.
- 打开供气装置，让供气软管加压，检查是否有漏气现象；
Open the air supply unit, allow the air supply hose to pressurize and check for air leaks.
- 将电源线插入到电源插座上。如果需要一根延长线，它必须符合机器的要求和所有的安全规定；
Plug the power cord into an electrical outlet. If an extension cord is required, it must meet the requirements of the machine and all safety regulations.
- 戴好防护用具；
Wearing protective gear.
- 打开电源开关；
Turning on the power switch.

4.2.2 设备启动后

- 喷射压缩空气一分钟，以净化系统；
Spraying compressed air for one minute to purify the system.
- 清除步骤：转动出冰的调节旋钮，将出冰量调节到最大，按下喷枪启动按钮。吹扫后，将出冰量调整到适当的值；
Clearance procedure: Turn the adjustment knob of the ice output, adjust the ice output to the maximum, and press the gun start button. After blowing, adjust the ice output to the appropriate value.
- 打开料斗盖；
Opening the hopper lid.
- 将 3mm 颗粒干冰放入冰仓，关闭料斗仓；
Place 3 mm pellets of dry ice into the ice bin and close the hopper bin.
- 按下喷枪启动按钮，开始进行干冰清洗；
Press the gun start button to begin dry ice cleaning.

4.2.3 设备关闭 Device shutdown

- 按下喷枪启动按钮，开始进行干冰清洗；
Press the gun start button to begin dry ice cleaning.
- 将料斗里所有干冰全部吹出；
Blow out all the dry ice in the hopper.

- 清除出冰管和喷嘴上的霜冻；
Removal of frost from ice dispensing tubes and nozzles.
- 关闭喷枪按钮，停止出冰/出气；
Close the gun button to stop ice/gas dispensing.
- 关闭设备电源开关；
Turning off the power switch of the equipment.
- 关闭空压总阀门；
Closing the main air pressure valve.
- 打开过滤器的排气阀，以完全释放管道的压力；
Opening the filter vent valve to completely relieve the pressure in the pipeline.
- 压力完全释放后，断开电缆，关闭料斗舱盖，拔下软管，并将其挂在设备上。
Once the pressure is fully relieved, disconnect the cable, close the hopper hatch, unplug the hose, and hang it from the unit.

4.3 操作要点 Operation points

- 绝不允许异物进入冰舱料斗；
Never allow foreign objects to enter the ice compartment hopper.
- 请使用厂家配置的喷枪和电缆；
Use the gun and cable as configured by the manufacturer.
- 平稳地拉伸扭曲的出冰管及进气管；
Smooth stretching of twisted ice outlet and air intake pipes.
- 平稳地拉伸扭曲的出冰管及进气管；
Smooth stretching of twisted ice outlet and air intake pipes.
- 使用时请锁定设备的脚轮；
Lock the casters of the equipment when in use.
- 当压缩空气压力低于 $4\text{kg}/\text{cm}^2$ ，请停止喷冰；
Stop ice blasting when the compressed air pressure falls below $4\text{ kg}/\text{cm}^2$.
- 降低出冰速率，然后逐步提高，以找到满足清洗要求的最佳出冰速率；
Reduce the ice discharge rate and then gradually increase it to find the optimum ice discharge rate to meet the cleaning requirements.
- 当操作中断时，请清空料斗；
Emptying the hopper when operation is interrupted.
- 反复、间歇性地按下爆破枪的触发器，粉碎凝结的干冰；
Repeatedly and intermittently pressing the trigger of the blasting gun to crush the condensed dry ice.

- 操作结束后，料斗没有干冰的情况下，空喷一分钟；
After the operation, the hopper is blasted empty for one minute without dry ice.
- 在使用前，放置出冰管以达到最大的机动性。
Place ice out tube for maximum mobility before use.

4.4 技术支持 Technical Support

- 喷嘴保持垂直于表面，以实现最快的清洁
Nozzle remains perpendicular to the surface for fastest cleaning
- 大多数喷嘴的最佳距离为 5 厘米；
Optimal distance of 5 cm for most nozzles.
- 使用喷枪的反冲力来支撑你的身体，而不是故意抵抗它。
Use the recoil of the gun to support your body, rather than intentionally resisting it.

5、人员培训 Personnel Training

- 在启动和维护客户购买的机器之前，必须对操作人员进行培训；
Operators must be trained prior to starting and maintaining the machines purchased by the customer.
- 培训对象：由客户指定的工人，有工作能力的健康人员，必须具备基本的电气知识。
Training targets: Workers designated by the customer, healthy people who are capable of working and must have basic electrical knowledge.
- 培训内容：干冰机指派技术人员对工人使用客户指定的设备或人员进行培训，包括学员的设备使用、维护和测试。通过测试的人可以进行测试。
Training content: The dry ice machine assigns technicians to train workers to use the equipment or personnel specified by the customer, including the use, maintenance and testing of the equipment by the trainees. Those who pass the test can perform the test.

6、设备故障排除 Equipment Troubleshooting

6.1 按下开关按钮，设备混冰棍不转动；

Pressing the on/off button, the device mixes the ice stick without rotation.

- (1) 观察下料口下方混冰棍是否有异物卡住;

Observe whether there is a foreign object stuck in the mixed popsicle below the downcomer.

- (2) 检查插设备是否通电，急停按钮是否打开，变频器显示屏是否亮起正常数据显示；（解决办法，如果混冰棍有异物卡住则需要将异物清出再尝试启动设备或联系设备供应商）

Check whether the plug-in device is energized, whether the emergency stop button is open, whether the inverter display lights up normal data display; (solution, if the mixed ice stick has foreign objects stuck then you need to clear out the foreign objects and then try to start the equipment or contact the equipment supplier)

6.2 混冰棍转动，喷枪不喷射

Mixing ice stick rotation, gun does not spray

- (1) 检查气源接口是否正常连接设备，检查空压机是否打开；（解决办法：正确连接气源接口并确认空压设备开启状态）

Check whether the air source interface is normally connected to the equipment, check whether the air compressor is open; (solution: correctly connect the air source interface and confirm the open status of the air pressure equipment)

6.3 设备正常运转，喷枪口只喷气不喷冰；

normal operation of the equipment, the nozzle mouth only spraying air and not ice.

- (1) 打开盖板查看漏斗内干冰是否已用完，如果有冰则观察搅拌器是否正常旋转。（解决办法：1.加入干冰继续使用；2.联系厂家提供备用下冰解决方案）

Open the cover to see if the dry ice in the funnel has been used up, if there is ice then observe if the stirrer is rotating normally. (Solution: 1. Add dry ice to continue using; 2. Contact the manufacturer to provide a backup under ice solution)

7、设备维护注意事项

Equipment maintenance precautions

- (1) 定期检查进气管和干冰输送管是否龟裂，接头是否漏气；
Periodically inspect the air inlet and dry ice delivery tubes for cracks and joints for leaks.
- (2) 设备使用后可从加冰漏斗中加入适量润滑油，保持设备润滑防锈；
The appropriate amount of lubricant can be added from the ice-filling funnel after the equipment is used to keep the equipment lubricated and rust-proof.
- (3) 设备禁止私自拆卸，设备故障概不负责。
Private disassembly of the equipment is prohibited, and we are not responsible for equipment failure.